



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,583	08/07/2001	Gabriel Fielding	83065PCW	2714

7590 09/06/2006

Thomas H. Close
Patent Legal Staff
Eastman Kodak Company
343 State Street
Rochester, NY 14650-2201

EXAMINER

PATEL, SHEFALI D

ART UNIT	PAPER NUMBER
----------	--------------

2624

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/923,583	Applicant(s) FIELDING ET AL.	
	Examiner Shefali D. Patel	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-18 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment was received on June 19, 2006.

Response to Arguments

2. Applicants' arguments filed on June 19, 2006 (Remarks on pages 5-6) have been fully considered but they are not persuasive.

Applicants argue on page 5 stating:

"It is respectfully submitted that this argument is redundant as Maes already teaches a method for identifying candidate frames that has the same function as the method taught by Venkatesan. Therefore, the motivation as suggested by the rejection does not withstand Maes' own teachings... While Maes does not make use of hash values as taught by Venkatesan, it is clear that the insertion of the watermark is done to identify candidate frames, and no reference is made to the requirement of the original signal in recovering this watermark."

The examiner respectfully disagrees.

As recited in the previous office action on page 2 that Venkatesan discloses method of claim 1 wherein the watermark is extracted without using frames from an original unwatermarked digital image sequence at col. 13 lines 1-15 and col. 14 lines 1-13. Please note that the examiner stated "Venkatesan does not expressly disclose the steps a, b, and c as recited in claim 1." Therefore, the examiner applied the secondary reference by Maes who teaches these steps as disclosed in the previous office action.

Applicants argue on page 6 stating:

"...the entire purpose of identifying the candidate frames in Maes is merely to increase the robustness of their method...and any arguments as to the specific method are irrelevant as our method does not require candidate frames in any case."

The examiner respectfully disagrees.

Applicants' arguments regarding "candidate frames" are unconvincing as these limitations are not recited in the claims. The claim recites having paid of frames to compare and compute a frame

Art Unit: 2624

differences. Maes meet these limitations. It is irrelevant that Maes uses candidate frames; the present invention does not recite not having that limitation in the claims.

Applicants argue on page 6 stating:

“Maes’ method still requires an original input signal after the candidate frames have been identified (col. 4, lines 36-67). As stated before, the claimed invention has the distinct advantage of not requiring an original input signal as we disclose on p.5, lines 29-31...”

The examiner respectfully disagrees.

This is the exact reason the examiner has combined the two references to meet the limitations of claimed present invention. Venkatesan discloses the fully blind approach (blind watermarking) as disclosed in the previous office action. The motivation of combining the Maes reference (which includes steps a, b and c) with Venkatesan (who discloses blind watermarking) is provided in detail in the previous office action and again here in this office action below.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 8-11, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkatesan in view of Maes et al. (hereinafter, “Maes”) (US 6,625,298).

With regard to **claim 1** Venkatesan discloses a method for extracting a watermark signal contained in a watermarked digital image sequence, having two or more frames represented by pixel values, wherein the watermark is extracted without using frames from an original unwatermarked digital image sequence at col. 13 lines 1-15 and col. 14 lines 1-13. Venkatesan discloses comparing hash value

Art Unit: 2624

for each frame to the hash value in the stored list at the detector end as disclosed at col. 12 lines 51-67.

However, Venkatesan does not expressly disclose the steps a, b, and c as recited in claim 1. Maes discloses a) estimating *pixel* correspondences (i.e., comparison) between one or more pairs of frames in the watermarked digital image sequence (comparing means 202 estimating correspondence between the input signal 201 and an original input signal 204, col. 4 lines 42-43. Note, this is done on frame-by-frame basis, col. 4 lines 45-46. Individual pixels are being estimated as the entire image itself if estimated.); b) computing a displaced frame difference for one or more frames in the watermarked digital image sequence using the *pixel* correspondences computed in step a) (*without reference to the original unwatermarked digital image sequence* (this is disclosed by Venkatesan as described above in this paragraph)) (obtain the difference based on the correspondence at col. 4 lines 43-53); and c) extracting the watermark signal from one or more displaced frame differences (See, col. 4 lines 54-60). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Maes with Venkatesan. The motivation for doing so is to “identify which frames are candidate frames, so that only those frames are considered in detecting the extra information” as suggested by Maes at col. 2 lines 15-23. This method can be used in Venkatesan to detect the extra information without using the original input signal. Please note, Venkatesan compares frame by frame it’s hash value to determine the center so it can also compare frame by frame to estimate correspondence between frames to compute the difference in order to detect the watermark signal. Therefore, it would have been obvious to combine Maes with Venkatesan to obtain the invention as specified in claim 1.

With regard to **claim 2** Maes discloses the displaced frame difference is computed by forming an estimated frame (estimated frame are represented as “missing” frames or frames that occurs twice at col. 4 lines 46-51) and subtracting the estimated frame from the corresponding frame in the watermarked digital image sequence as discloses at col. 4 lines 42-67.

With regard to **claims 8-9** Maes discloses computing displaced frame difference for each frame by using the correspondence with one, two, or more additional frames in the watermarked digital image sequence (note the use of word frame(s). See, col. 4 lines 45-53).

Claim 10 recites identical features as claim 1. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 10.

Claim 11 recites identical features as claim 2. Thus, arguments similar to that presented above for claim 2 is equally applicable to claim 11.

Claims 17-18 recites identical features as claims 8-9. Thus, arguments similar to that presented above for claims 8-9 is equally applicable to claims 17-18.

5. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkatesan in view of Maes et al. (hereinafter, "Maes") (US 6,625,298) as applied to claims 1-2, 8-11, and 17-18 above, and further in view of Albert et al. (hereinafter, "Albert") (US 6,473,698).

With regard to **claim 3** Venkatesan (modified by Maes) discloses all of the claimed subject matter as already discussed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Maes discloses estimating correspondence between image frames and obtaining differences between the input frame (i.e., current frame) and the original frame (i.e., previous frame). Maes does not expressly disclose estimating using gradient-based optical flow. Since Maes discloses comparing current frame to the previous frame and obtaining the difference (by subtraction) between the frames, it is obvious that the gradient method is being used (emphasis added by the examiner). Moreover, Albert discloses this at col. 3 lines 50-65. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Albert with Venkatesan and Maes. The motivation for doing so is to identify portions of the object in the image as disclosed by Albert. Therefore, it would have been obvious to combine Albert with Venkatesan and Maes to obtain the invention as specified in claim 3.

Claim 12 recites identical features as claim 3. Thus, arguments similar to that presented above for claim 3 is equally applicable to claim 12.

6. Claims 4-7 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Venkatesan in view of Maes et al. (hereinafter, “Maes”) (US 6,625,298) as applied to claims 1-2, 8-11, and 17-18 above, and further in view of Conover et al. (hereinafter, “Conover”) (US 6,373,960).

With regard to **claim 4** Venkatesan (modified by Maes) discloses all of the claimed subject matter as already discussed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Maes discloses estimating correspondence between image frames. Maes does not expressly disclose correspondences estimated using block-based matching. Conover discloses correspondences estimation using block-based matching at col. 9 lines 63 to col. 10 line 5. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Conover with Venkatesan and Maes. The motivation for doing so is to have watermark decoded propagate both spatially and temporally throughout the frames as suggested by Conover. Therefore, it would have been obvious to combine Conover with Venkatesan and Maes to obtain the invention as specified in claim 4.

With regard to **claim 5** Conover discloses correspondence estimation using layered motion estimation (Conover is using video data in which frames are layered. See, col. 9 lines 55 to col. 10 line 5).

With regard to claim 6 Conover discloses correspondence estimation using parametric region-based motion estimation (comparing coefficients at col. 14 lines 12-28).

With regard to **claim 7** Conover discloses compressed image stream (col. 7 lines 38-42) and at least a portion of the correspondences are estimated from motion vectors (col. 9 lines 55 to col. 10 line 5).

Claim 13 recites identical features as claim 4. Thus, arguments similar to that presented above for claim 4 is equally applicable to claim 13.

Art Unit: 2624

Claim 14 recites identical features as claim 5. Thus, arguments similar to that presented above for claim 5 is equally applicable to claim 14.

Claim 15 recites identical features as claim 6. Thus, arguments similar to that presented above for claim 6 is equally applicable to claim 15.

Claim 16 recites identical features as claim 7. Thus, arguments similar to that presented above for claim 7 is equally applicable to claim 16.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D. Patel whose telephone number is 571-272-7396. The examiner can normally be reached on M-F 8:00am - 5:00pm (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shefali D Patel
Examiner
Art Unit 2624

sdp

JINGGE WU
PRIMARY EXAMINER

